PRESS RELEASE

BRITISH PLASTICS FEDERATION PIPES GROUP

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USING SURVEY INFORMATION FOR NEW DRAINS AND SEWERS

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As pressure increases to use brownfield sites for new housing, the specialist skills involved in assessing the risks that contaminants pose to the quality of the water entering the surface water drainage and foul water sewerage system from the surrounding soil, is vitally important to house developers and water companies.

The BPF Pipes Group has prepared a new guide "Designing drains and sewers for brownfield sites" providing drainage engineers with clear advice on choosing a pipe which will be fit for the long term, starting with the information available to them from the investigation of potentially contaminated land and drawing on the materials expertise from pipe manufacturers. The guide is available on its website at www.bpfpipesgroup.com/support-downloads/guidance-notes.

The drainage engineer is most concerned about how harmful contaminants left in the ground, after any proposed remediation activity, could make their way into the drainage or sewerage system through infiltration and impact unacceptably on a downstream water course or wastewater treatment works. Secondly, it is important to know whether these chemicals might compromise the long-term performance of the pipe, joints and ancillaries.

The guide concisely describes the Conceptual Site Model (source/ pathway/ receptor linkages) so that the non-geotechnical specialist can appreciate the ways in which possible contaminants left on brownfield sites might pose a threat to the sewerage system. It puts into context why information is needed by the engineer on whether contaminants might potentially be present (highlighting the differences between a greenfield and brownfield site), on chemical concentrations, on their location on the site and their depth in the soil.

Alongside the design of the drainage and sewerage systems, choices are being made which may impact on the possible routing of pipelines (for example plot layout, location of amenities) and potential solutions being considered for managing contamination to protect the health of those who will live on the site. The drainage engineer needs to understand how each of these factors come together to influence the final design.

It cannot be assumed that the drainage engineer will also be a geochemist, an eco-toxicologist and a materials scientist. **Specialist knowledge on the effect of contaminants on the intended use of the site and on the pipe materials needs to be provided in a form which can readily be used in the decision process.** Without this, drainage engineers are increasingly presenting the basic soil sampling reports to pipe suppliers and asking for confirmation (a guarantee) on the choice of material for drains and sewers on brownfield sites.

"Specialist knowledge needs to be provided in a form which can readily be used in the decision process"

Through its guide, the BPF Pipes Group has been able to provide targeted information on the interaction of plastic pipes and potential contaminants on site and is seeking the support of the experts involved in the process of contaminated land investigation to similarly present information in a way which is accessible and clear to the drainage engineer.

Effect of contaminants on ingress

The pipeline will be made up of pipe lengths, typically linked by push-fit joints containing a sealing ring, with incoming pipes from individual properties connected at intervals. Ancillaries such as rodding points and inspection chambers permit access for inspection and maintenance. In a non-pressure (gravity) system, ingress of ground water through the various connections is possible but might not necessarily compromise the wastewater treatment process.

An initial flow diagram in the guide sets out a step-by-step process for the drainage engineer to identify if a quantitative risk assessment has been carried out, whether the contaminants could pose a risk if left in the ground and whether the source or the pathway might be removed due to the proposed remediation plans.

The geotechnical specialist undertaking the quantitative risk assessment and options appraisal can support the drainage engineer by drawing out the essential information from the site history and soil sampling:

- confirming where there is (and is not) a possible source of contamination - this is particularly pertinent on large sites with a mixed history of use;
- clearly setting out what chemicals are present from the many included in the test report and in which zones (areas) of the site; and
- explaining the mitigation strategies proposed so that any impact on the source of contamination or the pathway can be recognised.

"A clear presentation of essential survey information for the drainage engineer"

Suitability of materials for drains and sewers

A second flow diagram in the guide assists the engineer to identify the impact that residual contaminants may have on plastic pipe materials.

Plastic pipes and inspection chambers have been widely used for many years in the UK and are, in most cases, suitable for use on both brownfield and greenfield sites. Plastic pipes and chambers are naturally resistant to inorganic compounds such as acids and alkalis, sulphides, chlorides, sulphates or cyanide. Their properties will not be affected by the presence of metals in the soil.

"Plastic pipes are naturally resistant to inorganic compounds and not affected by metals"

Where organic compounds are shown to be present in the soil, the guidance provides limits for PAH, BTEX and TPH which represent a safe level with respect to long-term performance of polypropylene, polyethylene and PVC-U pipes. The engineer is again reminded that any

remediation activities which might remove the source of the contamination or the pathway to the drainage or sewerage system would render these limits superfluous.

Working together

The BPF Pipes Group guide provides practical assistance on designing drains and sewers for brownfield sites.

However, to be truly useful to the drainage engineer, it requires that a risk assessment has been completed, an options appraisal has been carried out to identify solutions, and that the geotechnical specialist provides information in a form which can readily be used in the decision-making process.

Working together, clear and targeted information can be offered, ensuring the longevity of the surface water drainage and foul sewerage networks on brownfield sites.